YUDKOVSKIY, M. (L'vov); KOVTUN, N. (L'vov)

Seminar-workshop for physics teachers. Fiz. v shkole 20 no.4:
100-102 Jl-Ag '60.   (MIRA 13:8)
              (Physics--Study and teaching)

8(0), 32(3)

SOV/112-58-3-4063

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1958, Nr 3, p 84 (USSR)

AUTHOR: Kovtun, N. F.

TITLE: 778 Kilometers of the Omsk Railroad Have Been Electrified
(Na Omskoy zheleznoy doroge elektrifitsirovano 778 kilometrov)

PERIODICAL: Elektr. i teplovozn. tyaga, 1957, Nr 2, p 32

ABSTRACT: The electrification of Omsk-Nazyvaevskaya section was completed
by the end of 1956. Six standard traction substations were built; 306 km of
contact lines were erected. RMNV-500/6 mercury rectifiers were installed
at substations. The rectifiers are supplied from a 110-kv transmission line
via TM-7,500/110 and TMRU-6,200 stepdown transformers. Voltages of 10
and 35 kv from a traction substation will be available for adjacent industries,
kolkhozes, sovkhozes, and machine-and-tractor stations. The contact line
consists of two copper 100-mm^2 wires, a BM-95 steel-and-copper messenger
cable, and an A-185 additional feeder. The possibility of eventual automation

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8(0), 32(3)

SOV/112-58-3-4063

778 Kilometers of the Omsk Railroad Have Been Electrified

of the substations was provided in their construction. At present, the Moskovka-depot locomotives operate in three directions: to Tatarskaya, Isil'-Kul', and Nazyvayevskaya. By the beginning of 1957, 778 km of the Omsk railroad track had been electrified.

T.A.K.

Card 2/2

Kootun, N.F.

KOVTUN, N.F.

KOVTUN, N.F.; BOBROV, Ye.G.

New rapid-acting VAB-28 switch. Elek. i tepl. tiaga no.12:11-14 D '57.
(MIRA 11:1)

1. Glavnyy inzhener sluzhby elektrifikntsii i energeticheskogo kho-
zyaystva Omskoy dorgi (for Kovtun). 2. Zamestitel' nachal'nika
tekhnicheskogo otdela sluzhby Omskoy dorog! (for Bobrov).
(Electric switchgear)

KOVTUN, N.F., inzh.

Ways to improve the power supply for d.c.electric railroads.
Zhel.-dor.transp. 41 no.9:45-50 S '59.   (MIRA 13:2)

1. Nachal'nik sluzhby elektrifikatsii i energeticheskogo
khozyaystva Omskoy dorogi.
                (Electric railroads--Substations)

KOVTUN, N.F., inzh.

How to protect a grounded section during overhead line work.
Elek.i tepl.tiaga 5 no.11:22-23 N '61.   (MIRA 14:11)
(Electric railroads—Maintenance and repair)

BOBROV, Yevsey Gdal'yevich; KOVTUN, Nikolay Fedorovich; SOKOLOV, S.D.,
    kand. tekhn. nauk, retsenzent; SIDOROV, N.I., inzh., red.;
    MEDVEDEVA, M.A., tekhn. red.

[Mercury rectifier unit with series-connected rectifying elements]
Rtutnovypriamitel'nyi agregat s posledovatel'nym soedineniem venti-
lei. Moskva, Vses.izdatel'sko-poligr.ob"edinenie M-va putei so-
obshcheniia, 1961. 106 p.   (MIRA 15:2)
          (Electric current rectifiers)

BOBROV, Ye.G., inzh.; GLUKH, Ye.M., inzh.; KOVTUN, N,F., inzh.;
FLEYSHMAN, L.S., inzh

Utilization of the power potentials of traction substations.
Zhel.dor.transp. 43 no.6:22-27 Je '61.

(MIRA 14:7)

1. Glavnyy konstruktor po rtutnym vypryamitelyam zavoda
"Uralelektroapparat" (for Glukh). 2. Nachal'nik konstruktorskogo
byuro zavoda "Uralelektroapparat" (for Fleyshman).
(Electric railroads—Substations)

KOVTUN, N.K.

Reducing the noise of planing and milling machines during the processing of wood. Der. prom. 13 no.2:12-13 F '64.   (MIRA 17:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.

KOVTUN, N.K.

Practical use of completed studies on noise abatement in
woodworking machinery. Der. prom. 14 no.5:30 My '65.

(MIRA 18:6)

KOVTUN, N. M.

See
Propagation of Electro-
magnetic Waves in
Wave Guides with
Complex Cross
Sections Containing
a Cross-Magnetized
Ferrite Plate," by
N.M. Kovtun, Kharkov
State Univ. im. A.M.
Gorkiy

report submitted for the Centennial Meeting of the Scientific Technological Society of
Radio Engineering and Electrical Communications im. A. S. Popov (VNKRIS), Moscow,
8-12 June, 1959

9.1300

AUTHOR: Kovtun, N.M.

TITLE: Electromagnetic Propagation in a Waveguide With Complex Cross-Section Containing Transversely Magnetized Ferrite Plates

TEXT: The article considers H-, Π- and Γ-shaped waveguides. Equations are obtained for investigating the propagation constant in dependence on the waveguide and ferrite parameters and the ferrite position. Analysis of these equations will be presented in a subsequent article. Acknowledgments are expressed to A.I.Tereshchenko and V.M.Sedikh for useful discussions. There are 2 figures and 7 references: 6 Soviet and 1 English.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo. Kafedra fiziki SVCh (Khar'kov State University im. A.M.Gor'kiy, Chair of VHF Physics)

SUBMITTED: June 24, 1959

Card 1/1

9,/3/0 (9/so //3o)

AUTHORS: Kovtun, N.M. and Tereshchenko, A.I.

TITLE: Investigation of the Characteristics of Resonance
             Ferrite Isolators (Valves) in H-Waveguides

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.10,
             pp.1593-1597

TEXT: The authors briefly review the properties and applications
of П - and H-shaped waveguides.   The wide-band properties of the
H-waveguide, together with the directional attenuation properties
of resonant ferrite isolators, may be used to obtain waveguide
"valves".   The manner in which the forward and reverse wave
attenuations, the forward-to-reverse ratio and the bandwidth
depend on the dimensions of the H-waveguide are investigated
theoretically and experimentally.   The investigation refers to an
H-waveguide such as shown in Fig.1, with a ferrite lamina placed
parallel to the narrow wall of the waveguide and magnetized along
the axis   z .   The author (H.M.Kovtun, Ref.6) has previously
derived a transcendental equation for the relative propagation
constant of such an arrangement and, from this equation, an
expression is now obtained by successive approximation which
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Investigation of ...

expresses the forward and reverse attenuation in terms of the waveguide dimensions and the free-space wavelength. The results are presented graphically. Curves are given showing the relation between the forward and reverse wave losses and the position of the ferrite lamina in the waveguide with different values of the ratio of the waveguide dimensions g/b, g being the "bridge" dimension. For comparison, corresponding curves are given for a rectangular waveguide with dimensions a and b. The curves for the H-waveguides and the rectangular waveguides are similar; the ferrite position for minimum forward loss is the same for both and is independent of g/b. The position for maximum reverse loss moves to the centre of the waveguide as the ratio g/b is reduced. Maximum forward-to-reverse ratio occurs when the value of g/b is such that the positions of the ferrite for minimum forward loss and for maximum reverse loss coincide. The dependence of the forward and reverse losses on the position of the ferrite lamina for various values of the ratio a_4/a, a_4 being the width of the bridge. The parameter a_4/a has little effect on the position of the ferrite for maximum reverse loss and, therefore, the width a_4 can always be made such that a_0 equals
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S/109/60/005/010/002/031
E033/E415

Investigation of ...

the distance from the wall to the bridge step (up to point A in Fig.1). In this case, the lamina has direct contact with the waveguide and better cooling is obtained. Also it is easier to fix the ferrite into the waveguide. The effect of asymmetry is discussed and it is concluded that the position of the ferrite corresponding to maximum reverse loss suffers little change for small asymmetry. The frequency characteristic of the "waveguide valve", i.e. the dependence of the forward and reverse losses on frequency, was investigated experimentally. The waveguide dimensions were $a = 23$ mm; $b = 10$ mm; $a_4/a = 0.39$; $g/b = 0.43$. The critical frequency was 1.6 times less than for the corresponding rectangular waveguide. The positions for the ferrite lamina for minimum forward and maximum reverse loss did not quite coincide but the difference was less than in the rectangular guide. The frequency characteristics for a single ferrite lamina are presented graphically. The reverse loss is greater than 27 db and the forward loss is of the order of 1.1 to 1.2 db in the 8000 to 10300 Mc/s band. For lower frequencies, the forward loss increases sharply. To improve the bandwidth, a dielectric lamina was included. The forward loss was then
Card 3/4

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S/109/60/005/010/002/031
E033/E415

Investigation of ...

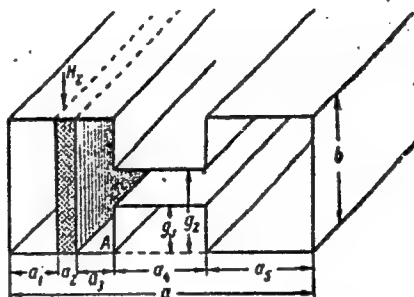practically constant at 0.4 db over the whole band and the
forward-to-reverse ratio was not worse than 45.   There are
7 figures and 6 references: 4 Soviet and 2 non-Soviet.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet
im. A.M.Gor'kogo Kafedra fiziki SVCh
(Khar'kov State University imeni A. M. Gor'kiy,
Physics Department SVCh)

SUBMITTED: December 26, 1959

Fig.1.

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9.1300 (1006, 1144, 1331)

AUTHORS: Kovtun, N. M. and Tereshchenko, A. I.

TITLE: Calculation of the Propagation Constants in H-Type Wave-
             guides With a Cross-magnetized Ferrite [25] Plate

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 9,
             pp. 1077-1080

TEXT: The authors present some results of an investigation of the pro-
pagation constants in an H-type waveguide [25] with a cross-magnetized ferrite
plate (a_2 = 3 mm) which is directly fastened onto the wall of the wave-
guide (Fig. 1). The overall width of the waveguide is a = 23, its overall
height b = 10 mm (standard 3-cm waveguide). A formula (1) is given for
the propagation constant. Some results obtained by interpolation of (1)
are graphically shown in Figs. 2 and 3. The authors studied the dependence
of the difference in phase shifts on the antisymmetrical components of
the magnetic permeability tensor at different heights of the waveguide
bridge, this dependence being equal to that of a rectangular waveguide.
The dependence of the maximum difference of phase shift on the bridge

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84447

Calculation of the Propagation Constants in   S/057/60/030/009/013/021
H-Type Waveguides With a Cross-magnetized Fer-   B019/B054
rite Plate

width is linear, i.e., the maximum difference of phase shift with given
parameters is the smaller, the longer the critical wavelength. This is
explained by the fact that the propagation conditions in these waveguides
approach those in the free space. Further, the authors conclude that it
is necessary to use waveguides with short critical wavelengths to obtain
large phase shifts. There are 3 figures and 9 references: 6 Soviet and
3 US.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A. M. Gor'kogo
              (Khar'kov State University imeni A. M. Gor'kiy)
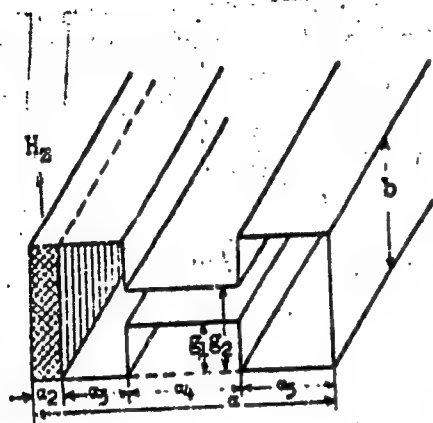
SUBMITTED: February 8, 1960

Card 2/3

84447

S/057/60/030/009/013/021
B019/B054

Card 3/3

KOVTUN, N. M.

Cand Phys-Math Sci - (diss) "Study of H-shaped waveguides (looked at end-on) containing transversely magnetized ferrite sheets." Moscow, 1961. 8 pp; (Ministry of Education RSFSR, Moscow State Pedagogical Inst imeni V. I. Lenin); 275 copies; free; (KL, 7-61 sup, 219)

23726

S/057/61/031/006/010/019
B116/B203

9,1300

AUTHORS: Kovtun, N. M. and Tereshchenko, A. I.

TITLE: Propagation of electromagnetic waves in waveguides of
cruciform cross section and a transversely magnetized
ferrite plate

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 6, 1961, 704-711

TEXT: The authors present the results of a theoretical study of the
propagation of electromagnetic waves in waveguides of cruciform cross
section and a magnetized ferrite plate. They study such a waveguide
(Fig. 1) assuming that the ferrite plate is magnetized along the z-axis,
and its permeability can be expressed by

$$\|\mu\| = \begin{vmatrix} \mu & ik & 0 \\ -ik & \mu & 0 \\ 0 & 0 & \mu_z \end{vmatrix}, \qquad (1)$$

μ and k depend on H_z, and are complex if there are losses (Ref. 7:

A. L. Mikaelyan. Dokt. diss., M., 1955). To find the propagation constants

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Propagation of electromagnetic waves ...

in such a waveguide, the authors use the method of joining of solutions
for the simple rectangular ranges into which the whole waveguide cross
section can be divided. With the use of Galerkin's method .Abstracter's
note: not stated, the authors derive, for the case of "low" waveguides
(Ref. 9: Ya. N. Fel'd. ZhETF, 9, 1944), the transcendental equation for
the propagation constant χ :

$$\frac{k}{\mu}\chi\left[\frac{h}{b}\left(\operatorname{tg} k_a a_5 + \frac{h}{b} k_s a_4\right)(1 + \operatorname{tg} k_s a_1 \operatorname{tg} k_s a_3) + \left(\operatorname{tg} k_s a_1 \operatorname{tg} k_s a_5 - \frac{h}{b}\right)\times\right.$$

$$\times (\operatorname{tg} k_s a_1 - \operatorname{tg} k_s a_3)\Big]\operatorname{tg} k_m a_2 - \left\{\frac{\mu_\perp}{\mu_0} k_s\left[\frac{h}{b}\operatorname{tg} k_s a_3\left(\operatorname{tg} k_s a_3 + \frac{h}{b}\operatorname{tg} k_s a_4\right) + \right.\right.$$

$$+\left(\operatorname{tg} k_s a_1 \operatorname{tg} k_s a_5 - \frac{h}{b}\right)\Big] + \frac{\mu_0}{\mu_\perp k_s}\left(\frac{k^2}{\mu^2}\chi^2 + k_m^2\right)\left[\frac{h}{b}\left(\operatorname{tg} k_s a_5 + \frac{h}{b}\operatorname{tg} k_s a_4\right) - \right.$$

$$-\operatorname{tg} k_s a_3\left(\operatorname{tg} k_s a_4 \operatorname{tg} k_n a_5 - \frac{h}{b}\right)\Big]\operatorname{tg} k_s a_1\Big\}\operatorname{tg} k_m a_2 + k_m\left[\frac{h}{b}(1 - \operatorname{tg} k_s a_1 \operatorname{tg} k_s a_3)\times\right.$$

$$\times\left(\operatorname{tg} k_s a_5 + \frac{h}{b}\operatorname{tg} k_s a_4\right) - (\operatorname{tg} k_s a_1 + \operatorname{tg} k_s a_3)\left(\operatorname{tg} k_s a_4 \operatorname{tg} k_s a_5 - \frac{h}{b}\right)\Big] = 0. \quad (12)$$

This equation permits a study of the dependence of the propagation
constants on the position of the ferrite plate in the waveguide, on the

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dimensions and parameters of the ferrite, on the waveguide dimensions, etc. Now, the authors study the case of weak magnetic fields, i.e., the case most important for the practice where the ferrite plate is attached to the waveguide wall ($a_1 = 0$). They study the dependence of χ on the

dimensions of the waveguide cross section and on the magnetic field. Results are shown in figures. Fig. 2 shows the dependence of the nonmutual phase shift η on the quantity k of the antisymmetric component of the tensor of the ferrite permeability for different heights h (Fig. 1). $\eta = \chi_+ - \chi_-$, where χ_+ and χ_- are the propagation constants of the direct wave and of the back wave, respectively. The dash-lined curve holds for a rectangular waveguide. Since the critical wavelength is determined by a in a rectangular waveguide and by h/b in a cruciform one, it may be concluded that the difference of the nonmutual phase shifts depends on the critical wavelength. Hence, it follows that waveguides with small λ_{crit}, i.e., waveguides with $\lambda_0/\lambda_{crit} \cong 1$, should be used to obtain large phase shifts. Fig. 3 shows the dependence of η on h/b. It is similar to the dependence of η on a in a rectangular waveguide. Now,

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the authors study the case of ferromagnetic resonance. They find the solution of Eq.(12) for this range for very thin platelets by means of successive approximation, and obtain the formula

$$\chi_\perp = \pm \frac{A}{D}\left(\frac{k}{\mu}\right)'' + \frac{B}{D}\left(\frac{\mu_0}{\mu}\right)'' + \frac{C}{D}\left(\frac{\mu_\perp}{\mu_0}\right)'', \qquad (15)$$

where

$$A = \left[\left(\operatorname{tg} k_s a_1 + \frac{b}{h}\operatorname{tg} k_s a_5\right)(1 + \operatorname{tg} k_s a_1 \operatorname{tg} k_s a_3) + \right.$$

$$\left. + \frac{b}{h}\left(1 - \frac{b}{h}\operatorname{tg} k_s a_1 \operatorname{tg} k_s a_5\right)(\operatorname{tg} k_s a_3 - \operatorname{tg} k_s a_1)\right]\frac{1}{1 - \operatorname{tg} k_s a_1 \operatorname{tg} k_s a_3};$$

$$B = -\frac{\gamma_0}{k_s}\frac{\operatorname{tg} k_s a_1}{1 - \operatorname{tg} k_s a_1 \operatorname{tg} k_s a_3}\left[\left(\operatorname{tg} k_s a_4 + \frac{b}{h}\operatorname{tg} k_s a_5\right) + \right.$$

$$\left. + \frac{b}{h}\operatorname{tg} k_s a_3\left(1 - \frac{b}{h}\operatorname{tg} k_s a_1 \operatorname{tg} k_s a_5\right)\right];$$

$$C = \frac{k_s}{\gamma_0}\frac{1}{1 - \operatorname{tg} k_s a_1 \operatorname{tg} k_s a_3}\left[\operatorname{tg} k_s a_3\left(\operatorname{tg} k_s a_1 + \frac{b}{h}\operatorname{tg} k_s a_5\right) - \right.$$

$$\left. - \frac{b}{h}\left(1 - \frac{b}{h}\operatorname{tg} k_s a_1 \operatorname{tg} k_s a_5\right)\right];$$

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Propagation of electromagnetic waves ...

$$D = \frac{1}{k_a}\left[-\left(\frac{a_4}{\cos^2 k_a a_4} + \frac{b}{h}\frac{a_3}{\cos^2 k_a a_3}\right) + \frac{b^2}{h^2}\left(\frac{a_4}{\cos^2 k_a a_4}\,\mathrm{tg}\,k_a a_3 +\right.\right.$$

$$\left.\left. + \frac{a_3}{\cos^2 k_a a_5}\,\mathrm{tg}\,k_a a_1\right)\mathrm{tg}\,k_a a_3 - \frac{b}{h}\left(1 - \frac{b}{h}\,\mathrm{tg}\,k_a a_4\,\mathrm{tg}\,k_a a_3\right)\frac{a_3}{\cos^2 k_a a_5}\right].$$

(15) permits a study of the dependence of damping of the direct and back waves, and of the valve ratio, on the waveguide dimensions, on the position of the ferrite plate, and on the parameters of the latter. All calculations were made for symmetrical cruciform waveguides (the projections being symmetrical with the waveguide axis). On the basis of the results, it is possible to determine the dependence of the characteristics of a phase shifter and valve with cruciform waveguides on the dimensions of the cross section and, therefore, on the critical wavelength of the waveguide. It is shown that the nonmutual phase shifts in cruciform waveguides are much larger than in rectangular ones with comparable cross-section dimensions. The valve ratio of resonance ferrite valves with cruciform waveguides decreases with decreasing λ_{crit}. In spite of this, the valves with cruciform waveguides offer a number of advantages over valves with rectangular waveguides: the possibility of operating on

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B116/B203

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high power levels (since a direct contact between the ferrite and the
heat-emitting metal wall of the waveguide can be guaranteed with
appropriate dimensions of the projection); increase in peak power by
increasing the distance between the walls in the place of maximum
electric field strength; the possibility of increasing the dimensions of
valves and phase shifters, as well as those of the ferrite plates, which
is of importance to wave shortening; the ferrites in cruciform waveguides
are particularly interesting when the shape of the cross section is used
in the whole channel. There are 7 figures and 9 references: 8 Soviet-bloc
and 1 non-Soviet-bloc. The reference to the English-language publication
reads as follows: P. H. Vartanian, J. L. Melchor, W. P. Ayres, Convention
Record IRE, 5, 1956.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A. M. Gor'kogo
               (Khar'kov State University imeni A. M. Gor'kiy)

SUBMITTED: July 25, 1960

Card 6/8

25031   S/057/6./03./007/012/021
                      B104/B106

9.1300

AUTHORS: Kovtun, N. M. and Terashchenko, A. I.

TITLE: Characteristics of ferrite phase shifters mounted in H
           wave guides

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 7, 1961, 834 - 836

TEXT: The authors give results of an investigation regarding the effect
of parameters and dimensions of ferrites placed arbitrarily in the cross
section of B-shaped wave guides, on the difference of the phase shifts.
The investigations were made with the aid of a high speed computer. The
equation for the propagation constant was given in a previous paper by
N. M. Kovtun (Radiotekhnika i elektronika n. 9 1960). All calcula-
tions were made for the case of small magnetic fields made without con-
sideration of losses. With the χ and χ values found (the propagation

constants for two directions of propagation) the difference of the
phase shifts was calculated with $\eta = \chi_+ - \chi_-$. The calculations were made

for the wave guide shown in Fig. 1, which in the dimensions a and b,
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Characteristics of ferrite...

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F 04/B106

corresponds to the cross section of a 1 cm rectangular standard wave
guide (23 $\times$ 10 mm). The results are graphically shown in Figs. 2 - 8.
The diagrams of Figs. 2 - 4 show η as a function of a for various wave
guide shapes. Fig. 5 shows the dependence of η_{max} as a function of a_2
for various wave guide shapes. It was shown that the optimum position
of the ferrite depends on its thickness and this dependence is shown in
Fig. 6 for various wave guides. The optimum thickness a_2 $_{opt}$ of the
ferrite is reduced with extension of the critical wavelength λ_{cr}. There
are 8 figures and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im A. M. Gor'kogo
              (Khar'kov State University imeni A. M. Gor'kiy)

SUBMITTED: October 10, 1960

Card 2/2

TERESHCHENKO, A.I.; KOROBKIN, V.A.; KOVTUN, N.M.

Possibility of widening the tuning range of a rectangular
resonator with the aid of ferrate. Zhur. tekh. fiz. 31 no.11:
1388-1391 N '61.   (MIRA 14:11)

1. Khar'kovskiy gosudarstvennyy universitet imeni Gor'kogo.
                    (Ferrates—Magnetic properties)
                        (Electric resonators)

S/058/63/000/003/086/104
A059/A101

AUTHORS: Kovtun, N. M., Tereshchenko, A. I.

TITLE: Investigation of the propagation constants in a cross-shaped wave-
guide with a ferrite plate

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1963, 25, abstract 3Zh147
("Uch. zap. Khar'kovsk. un-t", 1962, v. 121, Tr. Radiofiz. fak.,
v. 5, 32 - 38)

TEXT: The dependence of the nonmutual phase shift in a ferrite phase
shifter on cross section of a cross-shaped waveguide is examined. The waveguide
section including the rectangular transversally magnetized ferrite plate is di-
vided into five rectangular regions. Then, the fields are stitched together at
the boundaries, and the dependence of the field on one of the coordinates in the
sectional plane is taken in the form of a power series and is restricted to a
first approximation. As a result, a characteristic equation is obtained which
is investigated under the condition of the low strength of the magnetic field
and neglecting losses. The dependences of the irreversible phase shift on the

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Investigation of the...

S/058/63/000/003/086/104
A059/A101

position and the thickness of the ferrite plate, and also on the cross section of the waveguide are plotted. It has been established that maximum shift is obtained with a plate adjacent to the narrow wall of the waveguide. The dependence of the optimum thickness of the plate on the critical frequency of the waveguide has been found.

O. Postnov

[Abstracter's note: Complete translation]

Card 2/2

L 10050-63
BDS
ACCESSION NR: AR3000389   S/0058/63/000/004/H025/H025

SOURCE: RZh. Fizika, Abs. 4Zh148   *49*

AUTHOR: Kovtun, N. M.; Korobkin, V. A.; Tereshchenko, A. I.

TITLE: On the tuning range of a rectangular waveguide cavity tuned with a ferrite

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 121, 1962, Tr. Radiofiz. fak., no. 5, 44-48

TOPIC TAGS: ferrite-tuned waveguide, rectangular cavity

TRANSLATION: The dependence of the tuning of a rectangular waveguide cavity, by means of a ferrite, on the cavity parameters, is investigated. The tuning range is calculated by the perturbation method for the case when the ferrite plate is located 1) on the side wall and 2) on the end of the cavity. It is shown that for case 1), at a constant resonant wavelength, the tuning range increases with decreasing critical wavelength (with increasing wide wall of the waveguide). For case 2), the dependence is reversed. An experimental check is made on 4

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L 10050-63
ACCESSION NR: AR3000389

cavities measuring 19 by 10, 21 by 10, 23 by 10, and 25 by 10 mm, with a ferrite
plate 2.4 mm thick. The results of the experiments agree with the calculations.
Ye. Lebedeva

DATE ACQ: 14May63   ENCL: 00   SUB CODE: SD

cs/ja

Card 2/2

9.2571

AUTHORS: Tereshchenko, A.I., Korobkin, V.A. and Kovtun, N.M.

TITLE: Modulation and frequency retuning of a rectangular
               ferrite cavity-resonator by means of a rotating mag-
               netic field

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 8, 1962,
               1460-1462

TEXT: It is shown that a constant, rotating, magnetic
field can be used for modulation and frequency retuning of a ferrite
cavity. Thereby the frequency range of variation increases consid-
erably, and the law of change of the frequency can be made suffici-
ently close to a sinusoidal law. Using the perturbation method and
the expression for the magnetic-permeability tensor, one obtains for
a thin ferrite plate, placed at the end of the cavity, the relative X
frequency variation:

$$\frac{f - f_0}{f} = -\left(\frac{k_x}{k_0}\right)^2 \frac{d}{L} (\mu_\perp \cos^2\varphi + \mu_\| \sin^2\varphi - 1), \qquad (3)$$

Card 1/2

Modulation and frequency retuning ...

where $k_x = n\pi/L$; $k_0 = \omega/c$; L denotes the length of the cavity, and d the thickness of the ferrite plate; φ denotes the angle of rotation of the magnetic field H. A figure shows the dependence of f on φ, calculated by formula (3), as well as the corresponding experimental curve; there was good agreement between the calculated and experimental values. Another figure shows the following 3 experimental curves: the dependence of the frequency f on the magnetic field H, directed along the z-axis; the same dependence, with the field directed along the y-axis; the curve f versus φ (as in the first figure). In all cases, the same ferrite plate was used; its dimensions were 23 x 10 x 0.8 mm. Formula (3) shows that, for H_0 = const., the frequency of the cavity varies with the angle of rotation φ. Thus, a constant, rotating, magnetic field can be used for modulation and retuning of the cavity-frequency. There are 3 figures.

SUBMITTED: March 30, 1962

Card 2/2

ACCESSION NR: AR4023760   S/0274/64/000/001/A064/A064

SOURCE: RZh. Radiotekhnika i elektrosvyaz', Abs. 1A410

AUTHORS: Kovtun, N. M.; Tereshchenko, A. I.

TITLE: Resonant ferrite valve using H-shaped waveguide

CITED SOURCE: Uch. zap. Khar'kovsk, un-t, v. 132, 1962, Tr. Radio-fiz. fak., v. 7, 64-70

TOPIC TAGS: resonant ferrite diode, resonant ferrite valve, H shaped waveguide, transmission ratio, dispersion equation, ferrite plate, critical wavelength, forward transmission loss, transmission ratio

TRANSLATION: The losses and transmission ratio are investigated in an H-shaped waveguide with transversely-magnetized ferrite plate placed between the waveguide projections. The dispersion equation

Card 1/2

ACCESSION NR: AR4023760

for such a system, assuming very small thickness of the ferrite plate, is written in the form of a Taylor series. The specific calculations are made for a rectifier in a 23 x 10 mm waveguide intended to operate at frequencies on the order of 10 Gc. It is established that the position of the ferrite corresponding to the minimum of the forward losses shifts towards the nearest side wall of the waveguide with increasing critical wavelength of the waveguide λ_{cr}. For a ferrite location that ensures minimum forward losses the transmission ratio has a maximum as a function of λ_{cr}. The bandwidth relative to the transmission ratio increases with increasing λ_{cr} and can exceed by a factor of several times the bandwidth of diodes with rectangular waveguides. Bibliography, 5 titles. V. M.

DATE ACQ: 03Mar64   SUB CODE: GE, SD   ENCL: 00

Card   2/2

Card 1/4

L 16283-65
ACCESSION NR: AP4045499

...for various thicknesses of ferrite also show that the attenua-
...two absorption peaks which merge...

Data for various thicknesses of ferrite... two absorption peaks which merge
tion vs. field characteristic has two absorption peaks which merge
into one at a critical ferrite width — in the present case, 3.35
mm. The resulting peak is wider than either separate peak, while
its attenuation is lower. In the distribution of the magnetic
field for the fundamental oscillation mode in a v-form waveguide,
the field components vary sharply in the vicinity of the inner rib
walls; consequently, the field will differ greatly from point to
point in a ferrite element in this region; thus, it is impossible to
secure a field structure at which the loss is reduced to a suitable
minimum. Best overall results were found by mounting the isolator
on a dialectric base and locating the combination asymmetrically in
... of the guide. This yielded not less than 20 db at-
... and a VSWR not over 1.1...

coupling...
at the design frequency of ...
5 figures.

Card 2/4

L 16283-65
ACCESSION NR: AP4045499

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A. M.
Gor'kogo (Kharkov State University)

SUBMITTED: 14Nov63   ENCL: 01

SUB CODE: EC   NO REF SOV: 000   OTHER: 002

Card 3/4

L 16283-65
ACCESSION NR: AP4045499

ENCLOSURE: 01
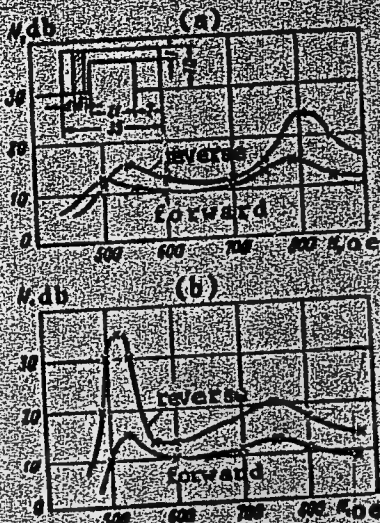
Fig. 1. The relationship between forward and reverse attenuation and magnetic field intensity at two positions of a ferrite isolator in a P-form waveguide.

(a) – d = 0; (b) – d = 3 mm;δ = 4 mm.

Card 4/4

SOV, 8-59-2-4/22

14(10)

AUTHOR: Kovtun, N.N., Engineer

TITLE: The Damming of the Araks River Bed at the
            Bagram-Tapinskiy Hydrotechnical Installation.
            (Perekrytiye rusla r. Araks v stvore Bagram-
            Tapinskogo gidrouzla)

PERIODICAL: Gidrotechnicheskoye stroitel'stvo, 1959,
            Nr 2, p 20-22   (USSR)

ABSTRACT: The author describes the damming of the Araks
            river bed during the construction of the
            Bagram-Tapinskiy (irrigational) hydraulic instal-
            lation in Azerbaydzhan. It was necessary to reroute
            the river flow so that an earth dam could be
            built. This dam was placed along the temporary
            10-span railway bridge. Seven spans were al-
            ready dammed when a part of the water flow
            was rerouted through the head-race. A guide-
            dam was then built from the right shore to

Card 1/2

14(10)

SOV/98-59-2-4/22

The Damming of the Araks River Bed at the
Bagram-Tapinskiy Hydrotechnical Installation

increase the flow of the river through the
head-race. At the same time, two more spans
were dammed. The last span was dammed with
1 cu m concrete blocks pushed into the water
by bulldozers. Altogether, 222 such blocks
were used, then stone and fascines were thrown
on them and the whole was covered with gravel
from the river valley. The use of large con-
crete blocks instead of stony fillers cut
down building expenses by 18%. There is
Card 2/2   1 layout and 1 table.

KOVTUN, N.P., inzh.

New regulator for internal combustion engines. Energomashinostroenie
6 no.8:41-42 Ag '60.   (MIRA 14:9)
        (Governors (Machinery)) (Gas and oil engines)

KOVTUN, N.YE.

USSR /Microbiology. Antibiosis and Symbiosis. Antibiotic.B.-2
    Antibiotics.

Abs Jour: Referat. Zh.-Biol., No. 9, 1957, 35582

Author : Nikitin, V.N.; Butskaia, V.D.; Vorobeva, T.M.;
    Ermakov, P.P.; Kovtun, N.E.

Title : The Influence of Acidophil Milk (Acidophilin)
    and Streptomycin on the Growth of Laboratory
    Animals

Orig Pub: Uch. zap. Kharkovskogo un-ta, 1956, 68, 275-279

Abstract: In 2 series of experiments with mature white rats
(55 animals) and 4 series of experiments with
white rats at the age of 1 month (45 animals),
an increase in the weight of the body was noted
when there was added to a rich ration 10 milli-
liters of acidophilin and 20 units of streptomycin

Card 1/2   *Chr. of Physiology of mamo animals, Sci Res Inst.*
Biology, Biology Faculty, Khar'kov State Univ

· USSR /Microbiology. Antibiosis and Symbiosis.   F-2
        Antibiotics.

Abs Jour: Referat. Zh.-Biol., No. 9, 1957, 35582

            for every gram of body weight. The greatest
            effect was obtained in the younger rats with the
            addition of streptomycin.

Card 2/2

KOVTUN, P.G., inzhener.

Device for clipping parts after extrusion. Vest.mash. 33 no.11:97-100
N '53.
(MLRA 6:12)
(Metal--Extrusion)

Kovtun, P. G.

USSR/Miscellaneous

Card 1/1   : Pub. 103 - 7/29

Authors   : Kovtun, P. G.

Title   : The geometry of working die-elements for deep drawing

Periodical   : Stan, i instr. 9, 21-23, Sep 1954

Abstract   : The importance of proper geometry of the working die-elements for deep
                 drawing of metal is explained. A properly selected geometry for the
                 working elements of drawing dies reduces the degree of deformation of
                 the processed metal and facilitates the drawing conditions. The geo-
                 metrical parameters of working die-elements from deep drawing of details
                 from thin sheeted-steel are shown. Table, drawings.

Institution : ...

Submitted   : ...

USSR/Engineering - Assembly Tools

Card   : 1/1

Authors   : Kovtun, P. G., Engineer

Title   : Device for fastening together the parts of containers

Periodical   : Vest. Mash. 34/5, 88 - 89, May 1954

Abstract   : A device is described for making containers out of sheet metal.

Institution : ....

Submitted   : ....

KOVTUN, P. O.

Improving the Technology of Hot Tinning. P. O. Kovtun. (Mar. 1956. (10), 532-540.) (In Russian). Experiments on the preliminary treatment of zinc, the hot tinning and the removal of the excess of tin by a brush are described, most attention being given to the last. By coupling the measurements preceding the technology of the hot tinning process, etc. It is claimed (of laboratory...)

KOVTUN, P.A.

Anisotropy of sheet steel and causes of its occurrence. Avt.i
trakt.prom. no.8:25-29 Ag '57.   (MIRA 10:12)

1. Lysven'skiy metallurgicheskiy zavod.
                (Anisotropy) (Steel--Metallography)

Kovtun, P.G.

KOVTUN, P.G., inzh.

Effect of properties of soft sheet steel on the drawing die life.
Vest. mash. 37 no.8:46-47 Ag '57.   (MLRA 10:9)
            (Dies (Metalworking))   (Steel)

SOV/133-58-7-23/27

AUTHOR: Kovtun, P.G., Engineer

TITLE: Advantages of Using Contact Sulphuric Acid for Pickling
              Mild Steel (Preimushchestva kontaktnoy sernoy kisloty pri
              travlenii myagkoy stali)

PERIODICAL: Stal', 1958, Nr 7, p 651 (USSR)

ABSTRACT: Advantages of using contact sulphuric acid instead of
              tower acid for pickling sheets and other articles are dis-
              cussed on the basis of experience gained on the Lys'va
              plant. The formation of a dark film on sheets pickled
              in tower acid, which is not completely removed by flux
              (before hot/zinc coating or tinning) was found to be due
              to arsenic in the acid. A comparison of the yields of 1st
              quality articles pickled in tower and contact acids is
              given.

ASSOCIATION: Lys'venskiy metallurgicheskiy zavod (Lys'va
              Metallurgical Plant)

Card 1/1   1. Steel--Pickling   2. Sulfuric acid--Applications

KOVTUN, P.G., inzh.

Technological improvements in making machine parts of sheet
steel. Vest. mach. 38 no.10:52-54 O '58.   (MIRA 11:11)
        (Sheet steel)   (Forging)

S/182/60/000/009/003/012
A161/A029

AUTHOR: Kovtun, P.G.

TITLE: Lubricant Choice for Extrusion of Parts From Thin Sheets

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, 1960, No. 9, pp. 10 - 12

TEXT: Various lubricants were tested in extrusion of two cup-shaped thin
sheet parts of 10кпГ (10kpG) steel rolled with shot-blasted rolls, with rough
and unlubricated surface and carbon content (in sheets) of 0.06 - 0.08%. The
reason of tests was lack of information on the effect of various lubricants re-
commended for deep extrusion (Refs. 1 and 2) on the wear of dies and the quality
of work. Details of test techniques are given. A large number of parts was
stamped in the tests. Industrial oil, vaseline, industrial oil with 10% graph-
ite, "sulfofrezol" and cotton oil proved unsuitable, many stampings were wrinkled
torn or cracked. Lubricants with a high content of soap or soap-oil emulsion
(12% of emulsion, 6 and 20% soap) were harmful for dies and work. Better reults
were obtained with a 6 - 8% emulsion; 6% soap gave satisfactory results in the
first extrusion stroke and less good results in the following stroke; at a tem-
perature below 25°C soap separated in flakes and the lubricant became unsuitable.

Card 1/3

S/182/60/000/009/003/012

Lubricant Choice for Extrusion of Parts From Thin Sheets A161/A029

In extrusion of sheets with bright smooth surface and less than 0.05% C content the die surface was spoiled when a 6 - 8% emulsion was used. Good results were obtained with the following lubricants:

No. of lubricants in tests	Composition in %
11	6-% oil-soap emulsion..90
	graphite.. 3
	bran.. 7
12	same emulsion...93
	plastic refractory clay or bentonite............................. 7
13	same emulsion...87
	graphite.. 3
	bran.. 5
	refractory clay.. 5

Bran is a good filler, sticks to the surface and retains the lubricant. Clay is to be mixed in the ratio 1 l clay/1 l water in a mixer, and added into the emulsion by small portions with rapid stirring. Suspensions of more than 4% refractory clay (or bentonite) keep solid particles in suspension, and graphite and talc added into the suspension do not settle on the bottom. Lubricant No. 13

Card 2/3

S/182/60/000/009/003/012
Lubricant Choice for Extrusion of Parts From Thin Sheets   A161/A029

proved best. The clay suspensions recommended for extrusion of non-ferrous met-
als (Ref. 3) proved good for steel. Graphite is a good filler but sticks to the
metal surface, addition of refractory clay facilitates its removal. Besides,
graphite forms hard and resistant scale in inter-operational annealing of parts.
This was the major obstacle in using graphite in lubricants for parts to be an-
nealed. This difficulty was eliminated by dipping the parts (before placing in-
to the furnace) into a solution of 5 - 6% ammonium chloride and 6 - 8% refractory
clay in water. Scale forming after such dipping is loose and easily removable.
The clay holds firmly graphite and other solid matter, absorbs greasy matter and
covers the metal with a thin layer, which makes higher recrystallization anneal-
ing possible (730 - 750°C). Thus emulsions with graphite could be used for very
deep extrusion. It is recommended for very deep extrusion of thin sheet steel
to use 6% oil-soap emulsion in the first operation, and the same emulsion with
the fillers mentioned in the second and the following. The use of such lubri-
cants raised considerably the die life and eliminated spoil of work at Lys'ven-
skiy metallurgicheskiy zavod (Lys'va Metallurgical Works). There are: 1 figure
3 tables and 3 Soviet references.

Card 3/3

1.1200 also 1454

22066
S/182/61/000/006/003/007
D038/D112

AUTHORS: Kovtun, P.G., Rozhkov, O.A.

TITLE: Certain factors determining the deep drawing capacity of sheet
             metal (Under discussion)

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 6, 1961, 7-13

TEXT: The article gives the results of experiments carried out at the Lys'-
venskiy metallurgicheskiy zavod (Lys'va Metallurgical Plant) into the entitled
factors under the supervision of Doctor of Technical Sciences L.V. Prozorov,
TsNIITMASh. 08 кп (08kp) and 10 кп (10kp) cold-rolled steel, and imported
DIN 1623 steel served as the experimental material. Double-action presses
and wear-resistant gray iron cupola dies were used. The deleterious effect
of mineral lubricants was established: it caused wrinkling and sticking to
the dies. Metallurgical plants were advised to discontinue the oiling of
sheet metal and the use of a 25% aqueous solution of sodium nitrite for
long-term storage was advocated. A thin oxide film forming in air after
annealing is not deleterious but beneficial; however, a thick hard film,
varying from light-yellow to gray in color, renders the steel completely un-
suitable for drawing. Skin-rolling of sheet and strip with 1-1.2% reduction
Card 1/3

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S/182/61/000/006/003/007
D038/D112

Certain factors determining ...

on rough rolls is beneficial. Contrary to the current opinion that deep-drawing steel must have the lowest possible carbon content, it was observed that steel with a bright surface with less than 0.06% C has poor drawing properties but 0.09-0.13% C content improves the drawing capacity, especial-ly when a thin oxide film is present and the sheet surface is not smooth. It has been established at the "Zaporozhstal'" zavod (Plant) that a special ОВГВ (OVGV) deep-drawing steel must contain not more than 0.07% C, and ВГВ (VGV) steel not more than 0.08% C (OVGV and VGV are the internal designations of "Zaporozhstal'"). The anisotropy of its properties is an inherent defect of sheet steel, as it causes tearing in drawing in one direction and folds in the other. It was concluded in experiments that slight anisotropy is permissible but medium anisotropy in sheets with a smooth and bright sur-face, and more marked anisotropy in sheets with a rough surface, renders the metal wholly unsuitable for deep multi-stage drawing. Insufficient heat treatment, i.e. annealing, was one of the causes of anisotropy in a sheet from rimmed mild steel not deoxidized with aluminum. It was stated by P.G. Kovtun (Ref. 15: Prichiny vyzyvayushchiye obrazovaniye vodorodnoy khrupkosti listovoy stali pri travlenii [Causes of Hydrogen Embrittlement in Sheet Steel Pickling], "Metallovedeniye i termicheskaya obrabotka", no. 9, 1959)

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Certain factors determining ...

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S/182/61/000/006/003/007
D038/D112

that pickling of cold-rolled mild steel with anisotropic properties causes
a drop in plasticity as a result of hydrogen absorption in dislocations of
grain boundaries. Steel imported from the FGR and France. and tested at the
Lys'va Metallurgical Plant was oiled with mineral oil and had no oxide film
on it. The steel was very difficult to draw. It first had to be degreased
and heated up to 260°C for four minutes to obtain a thin oxide film. There
are 2 figures, 7 tables, and 15 Soviet references.

Card 3/3

S/182/62/000/005/004/007
D036/D113

AUTHOR: Kovtun, P.G.

TITLE: Selection of the die materials for deep drawing thin sheet
            parts

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 5, 1962, 14-20

TEXT: Numerous investigations and attempts to develop dies for
drawing 500 mm deep and 340 mm diam parts were conducted in 1953-1958 at
the Lys'venskiy zavod (Lys'va Plant). The composition of the two grades of
iron finally developed is as follows: (1) 2.8 - 3.3% C; 1.3 - 1.6% Si;
0.7 - 1.0% Mn; 0.4 - 0.6% Cr; 0.3 - 0.7% Ni; 0.15 - 0.25% P; up to 0.08% S;
(2) 2.8 - 3.3% C; 1.4 - 1.8% Si; 0.7 - 1.0% Mn; 0.7 - 1.0% Cr; 1.2 - 1.8% Ni;
0.15 - 0.25% P and up to 0.08% S; a 3-4% addition of open hearth ferrosili-
con to the charge improves the iron quality. The iron must be discharged
from the cupola at not below 1300°C, and poured in well dried molds at
1250-1270°C. The best dies were produced from the second grade low-alloy
iron. Dies provided with interchangeable low-alloy iron rings were 2-2.5
times more durable than the others. To raise durability and improve the

Card 1/2

Selection of the die materials ...

S/182/62/000/005/004/007
D038/D113

drawing quality, the effective die area should be machined by mineral-ceramic cutting tools. There are 9 figures and 4 tables.

Card 2/2

AUTHORS: Zaostrovskiy, F. P., Kovtun, P. K.   SOV/64-58-5-8/21

TITLE: The Condensation of Ammonia From a Nitrogen-Hydrogen Mixture
              (Kondensatsiya ammiaka iz azoto-vodorodnoy smesi)

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 5, pp. 292 - 295 (USSR)

ABSTRACT: In the condensation of ammonia by cooling two processes, the
              transfer of heat and the mass, take place. The difference in
              the temperatures of the gas mixture and the cooling surface
              on the one hand, and the difference in the partial vapor
              pressure of the condensed component in the interior of the
              mixture and the pressure of the vapor phase stress at the
              condensation film at the wall on the other hand play the
              decisive roles here. The rates of these processes may be at
              different ratios to one another, so that, for instance, a
              vapor condensation may take place only at the cooling surface,
              or it may take place in the interior and lead to the formation
              of a fog. In order to avoid the latter the cooling of the
              vapor-gas mixture must apparently take place in such a way
              that the vapor oversaturation does not exceed the socalled
              critical oversaturation at which the condensation in the gas
Card 1/3   volume takes place. In order to determine the conditions

The Condensation of Ammonia From a Nitrogen-Hydrogen   SOV/64-58-5-8/21
Mixture

causing the formation of fog the concentration of the
condensing component and the temperature of the gases along
the heat exchange surface must be determined. There exist
some methods for calculating the cooling of partly condensed
gas mixtures. These do not, however, correspond to the
conditions mentioned. There are those found by Merkel (Ref 2),
Berman (Ref 4), or Colborn and Hougen (Kol'born i Khougen)
(Ref 3) which are too complicated. Others are incomplete
like that of Jonston (Dzhonston) (Ref 5). In order to in-
vestigate the problem mentioned in the title the authors
employed the "step-by-step" method of calculating the mobile
forces according to K.N.Shabalin et al. In the derivation
of the calculation equations the authors mention for the
coefficient of the convective heat transfer the formula by
Nussel't (Ref 6) and in the case of the coefficient of mass
transfer the analogous formula by Shervud (Ref 6). By means
of some examples the calculation of this condensation is
carried out according to the initial data. The relation of
saturation concentrations to the temperature is determined
according to the data supplied by Larson and Blek (Ref 7).

Card 2/3

The Condensation of Ammonia From a Nitrogen-Hydrogen   SOV/64-58-5-8/21
Mixture

   There are 3 figures and 8 references, 4 of which are Soviet.

   1. Ammonia--Condensation   2. Hydrogen-nitrogen mixtures--Chemical
effects   3. Hydrogen-nitrogen mixtures--Properties   4. Condensation
reactions

Card 3/3

KOVTUN, P.M.

[High millet yields] Vysokyi urozhai prosa. [Kharkiv] Kharkivs'ke obl.
vyd-vo, 1955. 23 p.   (MLRA 10:3)
          (Millet)

KOVTUN, V.P.; KOVTUN, P.P.

Refining of tin in the Tiraspol' "Metallolitografiia" plant. Kons. i
ov.prom. 18 no.4:24-25 Ap '63.   (MIRA 16:3)

1. Zavod "Metallolitografiya".
                    (Tiraspol'—Tin—Metallurgy)

KOVTUN, V.P.; KOVTUN, P.P.

New materials for solid lacquer coating of tinned sheet steel.
Kons. i ov. prom. 18 no.11:30-32 N '63.   (MIRA 16:12)

1. Tiraspol'skiy zavod "Metallolitografiya."

05204
SOV/142-2-3-12/27

6(6)
AUTHORS: Budov, A.F., Butrim, Yu.I., Kovtun, P.S., Ryazantsev, V.Yu., Yanovskiy, V.

TITLE: Experimental Industrial Television Devices

PERIODICAL: Izvestiya, vysshikh uchebnykh zavedeniy, Radiotekhnika, 1959, Vol 2, Nr 3, pp 361-363 (USSR)

ABSTRACT: The authors describe briefly the experimental industrial television equipment "Ekran-1", "Ekran-2" and "Ekran-3" which were developed at the Kafedra radiotekhnicheskikh ustroystv Khar'kovskogo politekhnicheskogo instituta imeni V.I. Lenina (Chair of Radio Engineering Equipment of the Khar'kov Polytechnic Institute imeni V.I. Lenin). The device "Ekran-1" was developed in 1956 for the visual control of the work of cutting tools on heavy boring and turning mills with two tool rests. The cameras have the dimensions 170x159x355 mm and a weight of 7 kg. They are mounted directly at the tool rests. The camera commutator unit, the control panel with the TV screen are mounted at the master control panel of the machine tool. During 1957 and 1958 the experimental industrial TV devices "Ekran-2" and "Ekran-3" were developed. These devices are

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SOV/142-2-3-12/27

Experimental Industrial Television Devices

more universal and produce high-quality images at a distance of
100-150 m. Additional conventional TV sets may be used at distan-
ces of up to 1 km ████ the control unit. The "Ekran-2" may be used
for televizing surgical operations. Fig.1 shows the TV camera used
for the "Ekran-2" and "Ekran-3". It has the dimensions 110 x 120
x 300 mm and a weight of 3.5 kg. A vidicon pick-up tube is used.
A 500 watt light source provides the necessary illumination of
500-1000 lux. With such an illumination the inertia of the vidicon
tube is very low and even high-speed production processes may be
observed clearly. All TV devices have interlaced image scanning
of 600-626 lines. The receiver units of "Ekran-2" and "Ekran-3"
are shown by photographs in figs.2 and 3. The interlacing parame-
ters correspond to the USSR TV standard. The synchrogenerator of
the industrial TV devices produces a simplified TV signal required
for the synchronization of the additional TV sets connected to
these devices. The synchrogenerator is composed of ten 6N1P tubes
(including cathode followers). The number of bulky parts in the
camera units was reduced to a minimum. The focussing of the pick-

Card 2/3   up tube is achieved by an electric motor operated from the control

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SOV/142-2-3-12/27

Experimental Industrial Television Devices

panel. The conventional TV sets which may be connected to the "Ekran-2" and "Ekran-3" are fed from a transmitter, consisting of a master oscillator-multiplier (6Zh3P) and an output stage (6Zh2P). The "Ekran-2" device contains provisions for transmitting audio frequencies to the conventional TV sets connected to it. All TV devices receive power from the AC mains. In the "Ekran-1" and "Ekran-2" the feed units contain heater transformers and kenotron rectifiers with electronic stabilization which feed all anode cir- cuits. In the "Ekran-3" germanium and selenium rectifiers are used. Electronic stabilization is used only for feeding the synchroniza- tion unit and the camera amplifier. A ferro-resonance voltage sta- bilizer feeds the entire device. All "Ekran" devices contain only four or five control knobs. The publication of this article was recommended by the Kafedra radiotekhnicheskikh ustroystv Khar'kov- skogo instituta imeni V.I. Lenina (Chair of Radio Engineering of the Khar'kov Polytechnic Institute imeni V.I. Lenin). There are 4 photographs.

Card 3/3

SUBMITTED: July 24, 1958

05204
SOV/142-2-3-12/27

Experimental Industrial Television Devices

panel. The conventional TV sets which may be connected to the
"Ekran-2" and "Ekran-3" are fed from a transmitter, consisting of
a master oscillator-multiplier (6Zh3P) and an output stage (6Zh2P).
The "Ekran-2" device contains provisions for transmitting audio
frequencies to the conventional TV sets connected to it. All TV
devices receive power from the AC mains. In the "Ekran-1" and
"Ekran-2" the feed units contain heater transformers and kenotron
rectifiers with electronic stabilization which feed all anode cir-
cuits. In the "Ekran-3" germanium and selenium rectifiers are used.
Electronic stabilization is used only for feeding the synchroniza-
tion unit and the camera amplifier. A ferro-resonance voltage sta-
bilizer feeds the entire device. All "Ekran" devices contain only
four or five control knobs. The publication of this article was
recommended by the Kafedra radiotekhnicheskikh ustroystv Khar'kov-
skogo instituta imeni V.I. Lenina (Chair of Radio Engineering of
the Khar'kov Polytechnic Institute imeni V.I. Lenin). There are 4
photographs.

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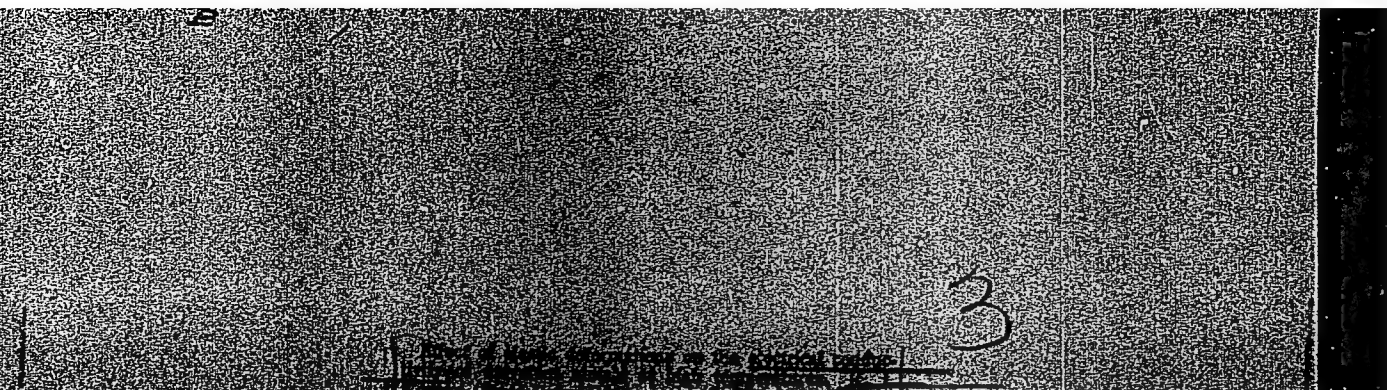SUBMITTED: July 24, 1958

KOVTUN, P.T.

Selecting efficient cogging conditions in the cold rolling of
iron. Metallurg 6 no.3:27-29 Mr '61.   (MIRA 14:5)

1. Lys'venskiy metallurgicheskiy zavod.
                        (Rolling (Metalwork))

DUSHIN, L.A. [Dushyn, L.O.]; KONONENKO, V.I.; KOVTUN, R.I.; PRIVEZENTSEV, V.I. [Pryvezentsev, V.I.]; SKIBENKO, A.I. [Skybenko, A.I.]

Use of an interferometer and the microwave cut-off method in studying a plasma. Ukr. fiz. zhur. 10 no.9:977-984 S '65.

(MIRA 18:9)

1. Fiziko-tekhnicheskiy institut AN UkrSSR, Khar'kov.

L 39553-66   EWT(1)/EWP(n)-2/EWC(f)/EWG(m)   IJP(c)   AT/JD/GD

ACC NR: AT6008859   SOURCE CODE: UR/0000/65/000/000/0189/0198.

AUTHOR: Dushin, L. A.; Kononenko, V. I.; Kovtun, R. I.; Privezentsev, V. I.;
Skibenko, A. I.

ORG: none

TITLE: Studying a plasma by probing with microwaves

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965,
189-198

TOPIC TAGS: microwave, plasma structure, plasma density, distribution function

ABSTRACT: The authors determine the spatial density distribution function for a plas-
ma by comparing the average density measured by a microwave interferometer with the
maximum density determined from the cutoff time of the microwave signals. These data
were used for finding the recombination and diffusion coefficient and for estimating
the electron temperature in the discharge. The experimental procedure is described in
detail and the derivation of the analytical formulas used in the work is discussed. It
is shown that curves for the average and maximum plasma densities or their logarithms
as functions of time will coincide as long as there is no noticeable diffusion to de-
stroy the initial distribution. The results confirm the data in the literature obtain-
ed by spectroscopic analysis of a Phillips discharge. Orig. art. has: 4 figures, 17
formulas.

SUB CODE: 20/   SUBM DATE: 20Oct65/   ORIG REF: 005/   OTH REF: 002

Card 1/1

L 24045-66   EWT(1)/T   IJP(c)   GS/AT/GW

ACC NR: AT6008843   SOURCE CODE: UR/0000/65/000/000/0045/0071

AUTHOR: Kovtun, R. I.

ORG: none

TITLE: Charge drift in spatially periodic magnetic fields

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 45-71

TOPIC TAGS: constant magnetic field, charged particle, magnetic resonance, Larmor frequency, asymptotic method

ABSTRACT: The author considers motion of charges in a constant magnetic field which consists of a strong longitudinal field H_0 directed along axis Oz and a week magnetic disturbance which is periodically dependent on z. This periodic perturbation is assumed to be cylindrically symmetric. The problem is solved by the asymptotic method. The calculation is limited to particles with trajectories which pass through the axis of symmetry of the magnetic field and which are not deflected too far from this axis. It is shown that this has absolutely no limiting effect on paraxial rays and that the angle which the charge velocity makes with the axis of symmetry may vary within rather wide limits which may be extended by a more exact approximation of the magnetic field which appears in the equations of motion. Although this makes the computations more

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L 24045-66
ACC NR: AT6008843

laborious, no fundamental difficulties are introduced. The problem is solved in the
resonance region and for the case of high transverse velocities. It is shown that
when charges drift in a spatially periodic magnetic field with velocities close to
the resonance velocity, more than half the kinetic energy of the longitudinal compo-
nent of motion may be periodically converted to Larmor rotation energy. The width of
the resonance velocity region is equal to approximately   2/

$$\sqrt{\epsilon(1-\xi^2)}W_0, \quad |\xi| \ll 1$$

where W_0 is the absolute charge velocity and ξ is the ratio of the resonance charge
velocity to W_0. Orig. art. has: 3 figures, 59 formulas.

SUB CODE: 20/   SUBM DATE: 20Oct65/   ORIG REF: 006/   OTH REF: 000

Card 2/2 dla

L 24046-66   EWT(1)/T   IJP(c)   WW/GG/GS/AT/GW

ACC NR: AT6008844   SOURCE CODE: UR/0000/65/000/000/0071/0078

46
B+1

AUTHOR: Kovtun, R. I.

ORG: none

TITLE: The case of exact resonance during charge drift in a slowly varying spatially modulated magnetic field

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps), Kiev, Naukova dumka, 1965, 71-78

TOPIC TAGS: charged particle, magnetic field, Larmor frequency, magnetic modulation

ABSTRACT: The author considers the motion of charges in a cylindrically symmetric magnetic field which is a superposition of two fields, viz. a strong field $H_0(z)$ which varies slowly with coordinate z (axis oz coincides with the axis of symmetry of the field) and a weak field $\varepsilon H_\varphi(z) \cos \nu z$ ($|\varepsilon| \ll 1$). In other words, the field $H_0(z)$ is modulated by an auxiliary field which is periodically dependent on z but has a constant depth of modulation ε. This problem may be of practical interest since the slow variation of the fundamental (strong) field may be selected in such a way that when certain conditions are fulfilled, the energy of the longitudinal motion of the charge in this field will be continuously "transferred" to Larmor rotation energy and back. It is shown that a nonhomogeneous magnetic field $H_0(z)$ may be chosen which vari-

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ACC NR: AT6008844

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es in space in proportion to the longitudinal component of velocity of particle $v_z(z)$ to satisfy resonance condition for an arbitrarily long time and raise the energy of a particle which may be transferred from energy of longitudinal motion to "transverse" energy and back. Thus it is assumed that a constant ratio $H_0(z)/v_z(z)=C$ is given so that velocity v_z and consequently the magnetic field $H_0(z) = Cv_z(z)$ may be calculated.

Only particles with trajectories passing through the axis of symmetry of the system are considered. It is found that an increase in radial field intensity with radius causes a more rapid change in the fundamental field in the case of exact resonance since this field amplification with coordinate r amounts to the same thing as increasing the depth of modulation. Orig. art. has: 18 formulas.

SUB CODE: 20/   SUBM DATE: 20Oct65/   ORIG REF: 000/   OTH REF: 000

Card 2/2 dda

ACC NR: AT6008857   EWT(1)/ETC(f)/EPF(n)-2/EWG(m)   IJP(c)   GS/AT

SOURCE CODE: UR/0000/65/000/000/0166/0179

AUTHOR: Dushin, L. A.; Kovtun, R. I.; Privezentsev, V. I.; Skibenko, A. I.

ORG: none

TITLE: Microwave refraction by a nonhomogeneous cylindrical plasma

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 166-179

TOPIC TAGS: microwave, plasma density, plasma physics, distribution function

ABSTRACT: The authors consider transmission of microwave beam through a cylindrical plasma with radial density distribution of the form

$$\frac{N(r)}{N_{cr}} = k[1 - (\frac{r}{r_0})^\gamma]$$

where $k = \frac{N_{max}}{N_{cr}}$ and N_{max} is the density at the axis of the cylinder. This expression is integrated with respect to the radius and then averaged to give

$$\gamma = \frac{\overline{N}/N_{max}}{1 - \overline{N}/N_{max}} = \frac{\overline{N}}{N_{max} - \overline{N}}$$

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L 23564-66
ACC NR: AT6008857

where $\overline{N}$ is the density averaged with respect to the radius. Thus a distribution function may be easily found which gives a nearly homogeneous form of distribution at large γ and is close to a δ-function when $\gamma \rightarrow 0$, by simultaneously measuring the maximum density and the density averaged with respect to the radius. The trajectory of a microwave beam in a cylindrical plasma is calculated and the effect of beam distortion during measurement of signal attenuation is considered. Experiments are conducted to determine the density distribution in a discharge column. The experimental data are analyzed on the basis of the formulas derived in the paper. Orig. art. has: 8 figures, 21 formulas.

SUB CODE: 20/   SUBM DATE: 20Oct65/   ORIG REF: 006/   OTH REF: 004

Card 2/2 FV

DUSHIN, L.A. [Dushyn, L.O.]; KONONENKO, V.I.; KOVTUN, R.I.; SKIBENKO,
A.I. [Skybenko, A.I.]; SINEL'NIKOV, K.D. [Synel'nykov, K.D,];
TOLOK, V.T.

Study of a plasma using a microwave interferometer. Ukr. fiz.
zhur. 8 no.7:740-746 Jl '63.   (MIRA 16:8)

1. Fiziko-tekhnicheskiy institut AN UkrSSR, Khar'kov.
            (Plasma (Ionized gases))
                (Interferometry)

L 33411-66   EWT(1)/T   IJP(c)

ACC NR: APG015304   (A, N)   SOURCE CODE: UR/0057/66/036/005/0827/0842

AUTHOR: Kovtun, R. I.

ORG: none

TITLE: Motion in spatially periodic magnetic fields

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 5, 1966, 827-842

TOPIC TAGS: electron optics, charged particle, magnetic field, particle trajectory, Larmor frequency

ABSTRACT: The author calculates the motion of a charged particle in a constant magnetic field consisting of a strong uniform field on which is superimposed a weak axially symmetric spatially periodic field. Only those trajectories are discussed that intersect the symmetry axis and remain sufficiently close to it. Asymptotic equations for the trajectories are derived by methods that are described in the monograph of Yu.A.Mitropol'skiy (Problemy asimptoticheskoy teorii nestatsionarnykh kolebaniy. Fizmatgiz, 1958), to which reference is made for some details of the calculations. When the ratio v/L (v is the longitudinal velocity of the particle and L is the period of the spatial variation of the magnetic field) is close to the Larmor frequency, there occurs a slow periodic exchange of kinetic energy of forward motion with that of Larmor rotation. The exact resonance in which the frequency of this exchange

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L 33411-66

ACC NR: AP6015304

$\mathcal{2}$

vanishes is unstable. The condition that the strong component of the constant magnet-ic field be uniform is relaxed and this field is assumed to be a slowly varying func-tion H(z) of the axial coordinate z. When the function H(z) has an appropriate form (which is calculated) the transfer of kinetic energy between the longitudinal and transverse motions of the charged particle becomes unidirectional and continuous. It is suggested that fields with this configuration may find practical application. The author thanks <u>K.D.Sinel'nikov</u> and <u>B.N.Rutkevich</u> for their interest and valuable re-marks. Orig. art. has: 93 formulas and 1 figure.

SUB CODE: 20/   SUBM DATE: 09Nov64/   ORIG REF: 005/   OTH REF: 000

Card 2/2 ULR

Kovtun, R.I.

24.7700   26595   S/185/60/005/003/010/020
                                             D274/D303

AUTHOR: Kovtyn, R.I.

TITLE: Effect of elastic deformation on the electrical
               conductivity of metals at high temperatures

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 3, 1960,
               386-395

TEXT: The effect of elastic deformations on the electrical conduc-
tivity of metals is considered by Bloch's equation for the distrib-
ution function of electrons. It is assumed that the conduction
zone is scarcely filled and, therefore, the Fermi surface is small
compared to the unit cell of the reciprocal lattice. This makes it
possible, when solving Bloch's equation, to assume anisotropic
sound-velocity provided it is sufficiently small. This replaces
Bloch's assumption on fully isotropic sound-velocity. Cubic symm-
etry of lattices is assumed. The undeformed lattice is discussed.
According to Bloch, the distribution function of electrons, in the

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                                                D274/D303

presence of a weak field F, is

$$f(k,E_K) = f_0(E_K) + g(k,E_K)$$

where k is the wave vector, E_K - the energy, and g - a small addi-
tional term to the Fermi function $f_0(E_K)$. After transformations,
one obtains (for a spherical Fermi surface) for the conductivity

$$\sigma = 6\pi^2 \frac{e^2 \hbar M v_0^2}{mC^2 \Omega_0 k} \cdot \frac{K}{T} \left(\frac{\partial E}{\partial K}\right)^2, \quad K = |k|. \tag{7}$$

here M is the atomic mass, T - temperature, C - a constant, Ω - the
Dirac function multiplied by a constant; this formula is identical
with Bloch's formula, provided the integration is carried out over
the entire Fermi surface. Further, weak anisotropicity of sound is
considered:

$$\frac{1}{v^2} = \frac{1}{v_0^2} \left[1 + \mathcal{E}(q)\right], \quad |\mathcal{E}(q)| \ll 1 \tag{8}$$

where v_0 = const. and $\mathcal{E}(q)$ - a function of q (q being the wave

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Effect of elastic deformation...^{26595} S/185/60/005/003/010/020
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vector of sound oscillations). For the conductivity one obtains

$$\sigma = \sigma_0 \left\{ 1 + 3K^{-2} \iint k_F \left(\iint q_F \mathcal{E}(q) dS_q \right) d\omega_K \right\}. \tag{9}$$

where σ_0 is the conductivity given by formula (7). $\mathcal{E}(q)$ is calculated from the equation for eigenfrequencies of longitudinal lattice-oscillations, yielding

$$\mathcal{E}(q) = -\Lambda \gamma (x_1^4 + x_2^4 + x_3^4).$$

where

$$\Lambda = \lambda_{1212}(\lambda_{1122} + \lambda_{1212})^{-1}$$

λ being the stress tensor. After transformations one obtains

$$\sigma = \sigma_0 (1 + 0.6\gamma\Lambda)$$

where γ is much smaller than unity, $(u = 1 + \gamma, \; u = \lambda_{1212}^{-1}(\lambda_{1111} - \lambda_{1122}))$. As regards the elastically deformed lattice, first, the

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effect of elastic deformations u_{pq} on the velocity of sound in the lattice is considered. In the first approximation, the deformations affect the longitudinal waves only. Further, formulas are derived which show that the conductivity is not only affected by variations of the stress tensor, but also by deformations of the Fermi surface. For the conductivity variations due to variations in λ one obtains

$$\delta\sigma_v = \sigma_o \sum_i \left[u_{ii}(\overline{A} + \overline{B}\cos^2\varphi_i) + \partial_i \left(A + B\cos^2\varphi_i + C\cos^{-1}\varphi_i \prod_{k=1}^{3}\cos\varphi_k \right) \right]$$ (16)

where φ_i are the angles between the vector F and the lattice axes, and A, B, and C are related to the derivatives of the stress tensor. In order to ascertain the effect of deformations of the Fermi surface, the changes in that surface under elongations and shears are considered. These lead to the following expression for the variations in conductivity due to deformations of the Fermi surface:

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$$\delta\sigma_l = \sigma_0\left[\frac{1}{5}(2\gamma_3 + 3\gamma_4)\delta V + \frac{4}{5}(\gamma_3 - \gamma_4)\sum_i \delta_i \cos^2\varkappa_i - 2\sum_{i \neq k} u_{ik}\right.$$

$$\left.\cos\varkappa_i \cos\varkappa_k \right. \quad (25)$$

where V is the lattice potential. By adding Eqs. (25) and (16), the total variation in conductivity is obtained. The foregoing considerations are extended to the case of a polycrystal with an elongation δ_p in the direction of one of the axes. For the conductivity one obtains:

$$\sigma = \sigma_0\left\{1 + \delta_p(\mathfrak{A} + \mathfrak{B}\cos^2\omega)\right\},$$

where

$$\mathfrak{A} = 0,3\gamma_1 - 0,9\gamma_2 + 0,45a_1 + b_1 + 0,2m - 0.1n,$$

$$\mathfrak{B} = 0,3(\gamma_1 - \gamma_2) + 0,15(a_1 - b_1) + 0,02(m - n).$$

The experimental values of $\mathfrak{A}$ and $\mathfrak{B}$ are known for many metals, hence the derivatives of the stress tensor could be determined, and a qualitative estimate obtained for the changes in the Fermi surface

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under elastic deformations, provided the Fermi surface is suffici-
ently small (of the order of a few tens of a_i^{-1}). The calculations
have shown that the assumption of small anisotropic sound-velocity
holds for practically all cubic-lattice metals. Finally, if trans-
verse lattice waves are taken into account, the absolute value of
the conductivity is affected and the variation $\delta\sigma_v$ (see Eq. (16))
decreases. There are 5 references: 2 Soviet-bloc and 3 non-Soviet-
bloc. The references to the English-language publications read as
follows: A.H. Wilson, The Theory of Metals, 1952; G.C. Kuzzynski,
Phys. Rev., 94, 61, 1954) $\underline{/}$ Abstracter's note: One of the refer-
ences is a translation into Russian $\underline{/}$.

ASSOCIATION: Fizyko-tekhnichnyy instytut AN USSR (Physico-tech-
nical Institute AS UkrSSR)

SUBMITTED: November 5, 1959

Card 6/6

L 1918-66   EWT(l)/ETC/EPF(n)-2/EWG(m)/EPA(w)-2   LJP(c)   AT
ACCESSION NR: AP5024128
UR/0185/65/010/009/0977/0984

AUTHOR: Dushin, L. O. (Dushin, L. A.); Kononenko, V. I.; Kovtun, R. I.;
Pryvezentsev, V. I. (Privezentsev, V. I.); Skybenko, A. I. (Skibenko, A. I.)

TITLE: Plasma investigation by means of the interferometer and the microwave
cut-off method

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 9, 1965, 977-984

TOPIC TAGS: plasma decay, plasma measurement, plasma diffusion, plasma electron
temperature, plasma diagnostics

ABSTRACT: The present paper describes a method for the study of plasma decay per-
mitting a simultaneous measurement of phases and amplitudes of signals transmitted
through the plasma. The phases were measured at 136 Gc/s and the amplitudes at
136.74 and 37 Gc/s. A method for plasma diagnostics by means of signals with
different frequencies is also presented. An approximation of the radial plasma
density distribution by means of the $F = 1 - (r/R)^r$ function is discussed (r is
estimated by the measured mean electron density and the maximum density decrease,
R is the radius of the plasma cylinder). An estimate is also made of the relative
contributions of recombination and diffusion to the plasma decay process. In the

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ACCESSION NR: AP5024128

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case where recombination is predominant, the recombination coefficient was de-
termined, from which the electron temperature was deduced. A comparison of this
temperature with the temperature value obtained by microwave attenuation indicates
satisfactory agreement of both methods. Orig. art. has: 27 formulas, 2 figures,
and 2 tables.

ASSOCIATION: Fizyko-tekhnichnyy instytut AN URSR, Khar'kov (Physics-Engineering
Institute, AN Ukr.SSR)   *44,55*

SUBMITTED: 09Nov64   ENCL: 00   SUB CODE: ME

NO REF SOV: 005   OTHER: 004

Card 2/2

KOVTUN, R.S.

Effect of the shapes of working parts of drawing dies on the strength and quality of drawings. Kuz.-shtam.proizv. 1 no.3: 22-28 My '59.   (MIRA 12:10)

1. Lys'yevskiy metallurgicheskiy zavod.
              (Drawing (Metalwork))

KOVTUN, S.D.

Rest currents of muscles and nerves fixed in formalin. Nauk.zap.Kiev.un.
8 no.7:120-148 '50 [i.e.'49].   (MLRA 9:10)

1.Sekter obshchey fiziologii.
(MUSCLES) (NERVES) (FORMALDEHYDE)

KOVTUN, S.D.

Effect of anode and cathode polarization on the function of ganglia.
Nauk.zap.Kiev.un.8 no.7:149-157 '50 [i.e.'49].   (MLRA 9:10)

1.Sektor obshchey fiziologii.
          (NERVES) (ELECTROPHYSIOLOGY)

KOVTUN, S.D.

The effect of acetylcholine on the electromotor properties of tissues and nerves. S. D. Kovtun, *Naukovi Zapiski Kiiv'k. Univ.* 12, No. 8, 193-200(1953)(in Ukrainian); *Referat. Zhur., Biol.* 1955, No. 7100.—In concns. of 1:500–1:10⁶ acetylcholine (I) induces a negation of the section of the frog muscle to which it has been applied. The effect parallels the concn. of the drug. The differential potential under the effect of I varies with the type of muscle. The depolarizing effect of I in the noninnervated muscle sections is less intense than in the innervated. The negation of the muscle is weakened upon the repeated application of I. Along with changes in the electromotive properties of the extensor muscles I brought about tetanic contractions, about 20% of the cases. In the case of the rectus abdominis muscle and the abdominal section of the chest muscle I induced contraction. I concns. of 1:100–1:8 × 10⁶ induced no noticeable changes in the electromotive properties of the nerves. Preliminary examination of the muscle or of the nerve had no effect on the action of I. It is believed that I is not the causal origin of the activity potentials of muscles or nerves.   B. S. L.